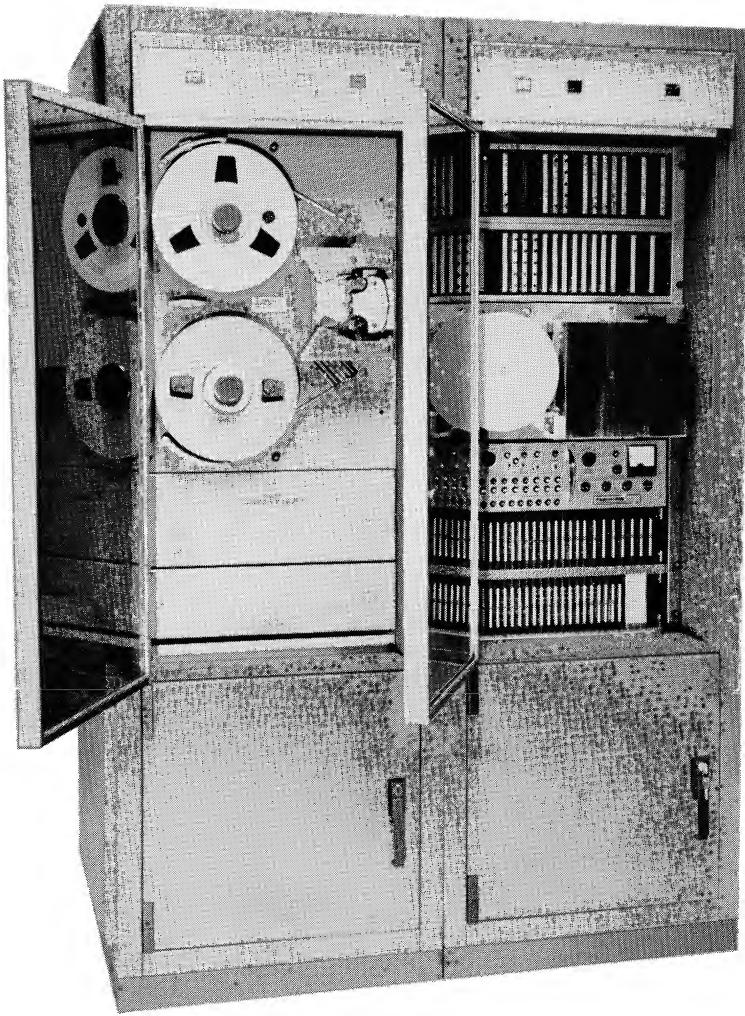


Mergenthaler

creates  
a basic  
new  
link  
between  
automated  
type  
composition  
and  
advanced  
data  
processing

**THE LINOFILM CONVERTER**



THE LINOFILM CONVERTER

# The Linofilm Converter

## Introduction

The Linofilm Converter, a link between the modern digital computer and the modern photographic typesetting machine, has been recognized as a significant new tool both for the printing industry and for users of data processing equipment.

The Linofilm System for rapid high-quality photographic typesetting has itself been making history in the printing industry since its commercial introduction by Mergenthaler Linotype in 1959. By mid-1962 some fifty-five plants were using over 220 Linofilm Keyboard Units, tape-automated Photographic Units and Linofilm Composer makeup machines to produce type for newspapers, periodicals and books, general commercial printing and a variety of specialty printed products.

Addition of a new machine unit, the Linofilm Converter, now extends the broad range of applications of Linofilm System type composition even further by linking it to advanced data processing equipment. Wherever computers and related equipment can be helpful in calculating, selecting and arranging information, results of these operations can now be forwarded without human intervention for Linofilm phototypesetting of full professional caliber and range.

Gains realized when Linofilm and the computer join forces include, of course, a huge step-up of physical quality of output compared to that of computer "read-out" units now commonly employed. Of equal importance is the unrivaled typographic versatility and range, characteristic of the Linofilm System, that is now available to the computer user or to his printer under automated conditions. The point can be made two ways: The computer user gains excellent, wide-range automated typography. The printer or publisher on his part can now apply the computer as a potent ally in attacking certain large-scale typesetting problems.

The Linofilm Converter, which makes possible advanced computer-typesetter cooperation, is a fully commercial development. Mergenthaler will be pleased to study and advise on potential applications as well as to discuss the specifics of price (or rental) and delivery. Demonstrations will be arranged.

## Background on Linofilm

As those in close contact with the printing industry are well aware, photographic type composition is one of the most important techno-

logical advances in the recent history of that industry. Phototypesetting machines, under direct or indirect keyboard control, expose images of master type characters in proper positions on photographic film or paper. After darkroom processing, the film or paper can readily undergo makeup and finishing operations followed by photomechanical production of a printing plate. Effective platemaking methods are available for entry into offset, letterpress or gravure printing.

The Linofilm System is the outstanding equipment approach to phototypesetting today. It is helping many printing and publishing managements to improve their speed, cost and quality showings on a wide variety of jobs. Linotype and Linofilm typesetting methods are not directly competitive, and are often used side by side as complementary tools in such complex productions as daily newspapers. Mergenthaler engineers make field studies which help to identify the best equipment complement and work pattern for a customer with given production needs.

A basic Linofilm installation consists of one to four Linofilm Keyboard Units, each of these being essentially a keyboard-controlled perforator of a 15-level paper tape, and a Linofilm Photographic Unit. The latter unit, under fully automatic tape control, produces the exposed photographic film or paper ready for darkroom or machine processing. The Linofilm Composer often assists further with flexible sizing and positioning of type lines.

At the standard keyboard and auxiliary controls of the Linofilm Keyboard Unit, an operator composes at electric-typewriter speed. On average work, with typical skills, three Linofilm Keyboard Units will load one Photographic Unit. The latter sets about twelve type characters per second, or some fifteen type lines per minute, on work comparable to normal newspaper news.

A unique distinction of Linofilm, of particular value in linking to data processing systems, is its combination of versatility and automation. Under fully automatic tape control, the Photographic Unit provides an unequalled range and flexibility of type character and face selections, type sizes, line lengths, interline spacing and other typographic features. All these features are controlled by the paper-tape medium—and thus, with use of the Linofilm Converter, by connected data processing and computing equipment. This takes us to the next part of the story.

## Principle of Operation

Because Linofilm paper tape carries the complete typographic story, including all variations in type face, size, line length and so on, it is ideally suited as a universal interim medium for type matter.

Furthermore, since the Linofilm paper tape code is one form of the digital language used by modern computers and data processing equipment, it is practicable to use this tape as a point of contact with such equipment.

The Linofilm Converter is the link which makes this contact possible. Through it, digital information computed, selected or arranged by computers and other data processors can be put in the form of Linofilm paper tape. Through a Linofilm Photographic Unit, this tape in turn results in "print-out" of the computer output. But the "print-out" so obtained is far removed from that usually associated with data processing operations, in quality, typographic range and variety.

The Linofilm Converter ushers in a new era of automated type composition by acting as an intermediary between the magnetic tape universally used with modern digital computers, and the paper tape of the Linofilm System. Accepting magnetic tape after its generation in a computer or related piece of data processing equipment, the Linofilm Converter reads the magnetic signals, rearranges the information content into standard Linofilm format, and punches a 15-level paper tape ready for use as control input to a Linofilm Photographic Unit. Three successive codes on the magnetic tape generate one code on the Linofilm paper tape.

## General Description

The Linofilm Converter is housed in two cabinet units. A tape drive and reader unit for computer magnetic tape forms the input section of the Converter, and a high-speed paper tape punch the output section. Other principal contents include a temporary storage unit and a solid-state electronic logic unit which provides central control and rearranges the format of the information.

Over-all production speed of the Converter is the speed at which the output Linofilm paper tape is punched. It averages 40 Linofilm codes per second, a rate sufficient to load fully three to four Linofilm Photographic Units.

The Converter accepts magnetic tapes produced by standard computer and data processing equipment. Since data formats on these tapes may vary, it is necessary for the user to specify in advance some details on the tape generating equipment he will be using with the Converter.

The Linofilm Converter is a commercial actuality, subject to firm quotation after applicability to a specific set of operations has been determined. For purchasers, an annual service contract is offered and is backed up by the extensive Linotype-Linofilm service organization. A lease is also available.

## Some Applications

The first application of the Linofilm Converter principle went into practical operation in mid-1961 and has been in daily production ever since. A major industrial research laboratory programmed an assemblage of computer equipment to perform machine translation of Russian-language technical literature into English. To provide direct typographic output, a Linofilm Photographic Unit was integrated into the system. With minimum further handling, the Linofilm product now leads to printed reports and documents of high quality that preserve the typographic variety and refinements which make for effective end use.

The Linofilm Converter concept is not, however, confined in its application to jobs like the language translation program. Now under study and planning are a number of applications to the production of directories, catalogs, timetables, abstract journals and other printed products.

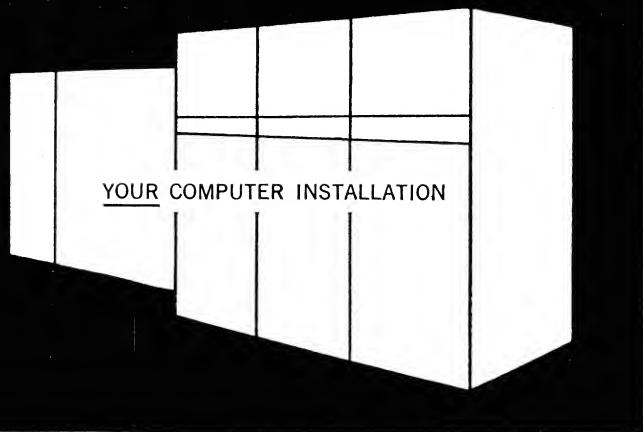
A scientific institution which calculates spectroscopic data on large computers may soon print out results of these calculations directly in clean, high-quality, error-free form for publication by the method outlined here.

Another organization is planning to receive periodic information and late changes from large transportation firms, digest and arrange these in digital computer equipment, and Linofilm-compose direct contents of timetables, tariffs and other publication matter needed. Speed and accuracy of service will be upgraded.

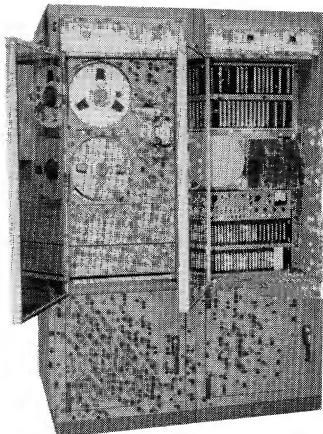
Some directory publishers are studying plans for automating massive type composition jobs by joining computer equipment and Linofilm with the aid of the Linofilm Converter. Important reductions in time, cost and errors along with gains in quality and salability of the product are expected. Advertising insertions and other matter of varying format, used in many directories, fall well within the typographic range of such a system when (and only when) it is built around the "wide range with automation" feature exclusive with Linofilm.

Composition of complex mathematical formulations, with good typographic quality for textbook and professional uses, has always been a slow and costly job. The versatility of the Linofilm System is now being brought to bear on this problem, and the way is being opened up to very large time and cost savings in this kind of composition. It is to be expected that gains made on this front will be available to both "direct" and computerized Linofilm users.

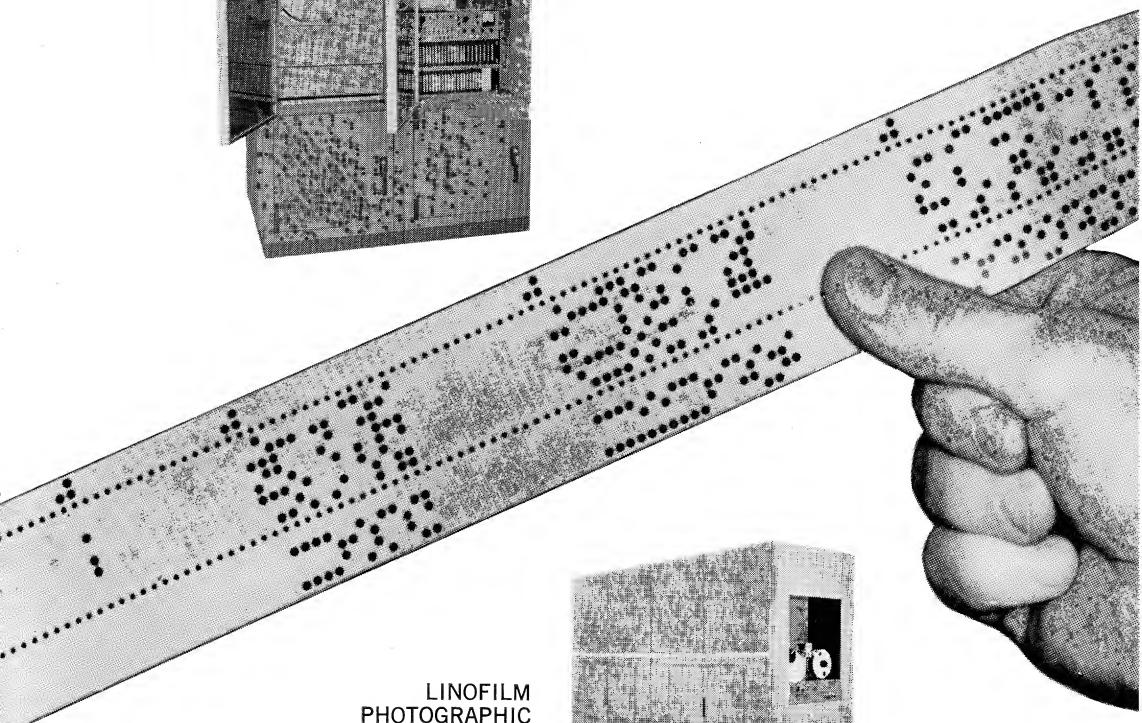
Applications for the new computer-Linofilm team are virtually unlimited. New ones are being suggested and investigated almost daily. Mergenthaler engineers will be glad to discuss potential applications with interested parties.



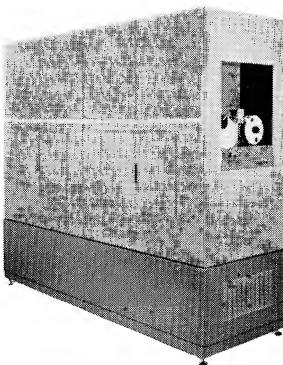
**Automated  
typesetting  
with the  
LINOFILEM  
CONVERTER**



LINOFILEM  
CONVERTER



LINOFILEM  
PHOTOGRAPHIC  
UNIT



# Mergenthaler



MERGENTHALER LINOTYPE COMPANY  
29 Ryerson Street, Brooklyn 5, New York